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CDRL: 05156  
March 1993

Reuse Library Framework  
Unix Binary Release Version 4.1  
Version Description Document

Informal Technical Data



STARS-UC-05156/016/00  
March 1993

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March 1993

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UNIX Binary Release Version 4.1  
SunOS Implementation*

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Reuse Library Framework

UNIX Binary Release Version 4.1

SunOS Implementation

**Approvals:**

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13. ABSTRACT (Maximum 200 words) The Reuse Library Framework (RLF) is an Ada system designed and implemented to support the production and installation of domain-specific software library systems. The RLF is based on two fundamental subsystems: AdaKNET (Ada Knowledge NETwork) and AdaTAU (TAU is an acronym for Think Ask Update) which are knowledge representation and inferencing systems derived from systems previously developed by Unisys in Prolog. These subsystems are supported by an integrating framework to allow them to be used in combination with each other. AdaKNET and AdaTAU are also equipped with interface specification languages (Library Model Definition Language (LMDL) and Rule Base Definition Language (RBDL) respectively) that are used to initialize domain models that describe the library (or application) domain. In addition to the support of library systems, the RLF was used to develop a prototype Ada unit test assistant during the STARS Foundations period and has been applied to the representation of software and reuse process models which are themselves machine processable.			
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**Contents**

<b>1 SCOPE</b>	<b>1</b>
1.1 Identification . . . . .	1
1.2 System Overview . . . . .	1
<b>2 RELATED SOFTWARE</b>	<b>1</b>
<b>3 VERSION DESCRIPTION</b>	<b>1</b>
3.1 Inventory of Contents . . . . .	1
3.1.1 Directory: <b>docs</b> . . . . .	2
3.1.1.1 Subdirectory: <b>manuals</b> . . . . .	2
3.1.1.1.1 RLF Administrator's Manual. . . . .	3
3.1.1.1.2 RLF Installation Guide. . . . .	3
3.1.1.1.3 RLF Modeler's Manual. . . . .	3
3.1.1.1.4 RLF User's Manual. . . . .	3
3.1.1.2 Subdirectory: <b>tutorials</b> . . . . .	3
3.1.1.2.1 RLF User Tutorial. . . . .	3
3.1.1.2.2 RLF Administrator Tutorial. . . . .	3
3.1.1.2.3 RLF Modeler Tutorial. . . . .	4
3.1.2 Directory: <b>models</b> . . . . .	4
3.1.2.1 Subdirectory: <b>models/ada_x</b> . . . . .	4
3.1.2.2 Subdirectory: <b>models/animals</b> . . . . .	4
3.1.2.3 Subdirectory: <b>models/asw</b> . . . . .	4
3.1.2.4 Subdirectory: <b>models/common_data_model</b> . . . . .	4
3.1.2.5 Subdirectory: <b>models/demo_actions</b> . . . . .	4
3.1.2.6 Subdirectory: <b>models/window_manager</b> . . . . .	5
3.1.2.7 Subdirectory: <b>models/software_technology</b> . . . . .	5
3.1.2.8 Subdirectory: <b>models/sort_and_search</b> . . . . .	5
3.1.3 Directory: <b>Libraries</b> . . . . .	5
3.1.4 Directory: <b>unix/bin</b> . . . . .	5
3.1.4.1 Subdirectory: <b>bin/bitmaps</b> . . . . .	6
△ 3.2 Changes Installed for Version 4.1 . . . . .	6
3.2.1 <i>Library_Manager</i> Application Refinement . . . . .	6
3.2.2 RLF Graphical Browser . . . . .	6
3.2.3 RLF Sample Libraries . . . . .	6
3.2.4 Installation Script Insertion . . . . .	6
3.3 Adaptation Data . . . . .	6
3.3.1 Operating Environment . . . . .	6
3.3.2 Development Environment . . . . .	7
3.4 Interface Compatibility . . . . .	7
3.4.1 Previously Built RLF Libraries . . . . .	7
3.4.2 Libraries Built with Different Compilers . . . . .	7
3.5 Installation and Usage Instructions . . . . .	7
3.5.1 Invoking RLF Applications . . . . .	8

3.6	Potential Problems . . . . .	8
3.6.1	Graphical_Browser Known Problems . . . . .	8
3.7	Future Enhancements . . . . .	8
<b>4</b>	<b>USER FEEDBACK</b>	<b>9</b>
<b>5</b>	<b>NOTES</b>	<b>10</b>
<b>A</b>	<b>Appendix: Inventory of Contents</b>	<b>11</b>
<b>B</b>	<b>Appendix: RLF Start-up Files</b>	<b>27</b>
B.1	Sample RLF .rlfrc Start-up File . . . . .	27
B.1.1	File: .rlfrc . . . . .	27
B.2	RLF Graphical Browser Start-up Script . . . . .	28
B.2.1	Script: RLF_GB . . . . .	28
<b>C</b>	<b>Appendix: UNIX Installation</b>	<b>33</b>
C.1	Scripts for Installing the UNIX RLF Binary Release . . . . .	33
C.1.1	Script: Install_Rlf_bin . . . . .	33
C.1.2	Script: Install_Rlf.csh . . . . .	37
C.1.3	File: Install_Plf.var . . . . .	38
C.2	Scripts for Building Sample Networks . . . . .	40
C.2.1	Script: Build_Ada_X_Lib.csh . . . . .	40
C.2.2	Script: Build_Animals_Lib.csh . . . . .	41
C.2.3	Script: Build_Asw_Lib.csh . . . . .	42
C.2.4	Script: Build_Common_Data_Model_Lib.csh . . . . .	43
C.2.5	Script: Build_Demo_Actions_Lib.csh . . . . .	44
C.2.6	Script: Build_SW_Tech_Lib.csh . . . . .	45
C.2.7	Script: Build_Sort_And_Search_Lib.csh . . . . .	46
C.2.8	Script: Build_Move_Domain_Lib.csh . . . . .	46

The distribution is organized as follows:

```
Libraries
Libraries/Taustuff
Libraries/Text
Libraries/Text/demo_animals
Libraries/Text/sort_and_search
docs
docs/manuals
docs/tutorials
bin
bin/bitmaps
man
man/cat1
man/man1
models
models/ada_x
models/ada_x/Text
models/ada_x/Text/Widgets
models/ada_x/Text/Xlib
models/ada_x/Text/Xmu
models/ada_x/Text/Xt
models/animals
models/animals/Text
models/asw
models asw/Text
models/common_data_model
models/common_data_model/Text
models/demo_actions
models/demo_actions/Text
models/demo_actions/Text/sounds
models/demo_actions/Text/xbm
models/window_manager
models/window_manager/Text
models/software_technology
models/software_technology/Text
models/sort_and_search
models/sort_and_search/Text
```

A complete listing of the contents of this distribution is included in Appendix A.

### 3.1.1 Directory: docs

The two subdirectories of **docs** contain the RLF manuals and tutorials currently delivered in this RLF release.

#### 3.1.1.1 Subdirectory: manuals

**3.1.1.1.1 RLF Administrator's Manual.** The *RLF Administrator's Manual* provides the information necessary for an RLF reuse library administrator to install, modify, and maintain a reuse library hosted on RLF.

**3.1.1.1.2 RLF Installation Guide.** The *RLF Installation Guide* informs the user how to install, build and start up the STARS RLF and its user interface applications, namely the **RLF Graphical Browser** and the **RLF Library Manager**.

**3.1.1.1.3 RLF Modeler's Manual.** The *RLF Modeler's Manual* provides the information necessary for an RLF reuse library domain modeler to model, encode, and build an RLF reuse library specification and the library itself. It also defines how to model, encode, and install the RLF library advice modules called "inferencers."

**3.1.1.1.4 RLF User's Manual.** The *RLF User's Manual* describes the use and basic customization of the **Graphical Browser** application. The reader is not expected to be a programmer, but familiarity with the UNIX C shell, and basic X Window System operations using the Motif Window Manager (**mwm**) or some other window manager is assumed. Some explanation of RLF concepts is provided, but only at an elementary level.

**3.1.1.2 Subdirectory: tutorials** This directory contains three PostScript file representations of the contents of three RLF training packages that will be used as hand-out material in support of the delivery of RLF training sessions. While the documents can be read on their own, and are formatted in an article-style format, they are oriented more for a presentation of the material by a speaker using transparencies. The tutorials are also designed to be supplemented by in-class demonstrations of RLF software and the conducting and monitoring of both in-class and out-of-class student exercises using the software.

**3.1.1.2.1 RLF User Tutorial.** The *RLF User Tutorial* presents a survey of the usage of the **RLF Graphical Browser** application which will enable new RLF users to quickly learn the user interface and the various RLF features which it presents.

**3.1.1.2.2 RLF Administrator Tutorial.** The *RLF Administrator Tutorial* provides an introduction to the installation and maintenance of RLF library systems. This tutorial assumes that the user is familiar with the basic RLF interface (for example, as presented in the *RLF User Tutorial*). A survey of the **Library Manager** application is also presented in the tutorial.

**3.1.1.2.3 RLF Modeler Tutorial.** The *RLF Modeler Tutorial* provides a thorough presentation of RLF modeling capabilities so that attendees can begin the construction of RLF models for application domains of interest to them. Familiarity with the material covered in the *RLF User Tutorial* is assumed. Modeling techniques are discussed and the use of the RLF model specification languages is taught through the use of a detailed example.

### **3.1.2 Directory: `models`**

Sample libraries and their build scripts are found in the `models` directory, which contains the `ada_x`, `animals`, `asw`, `common_data_model`, `demo_actions`, `window_manager`, `software_technology` and `sort_and_search` subdirectories. The contents of these subdirectories are described in the following sections. This directory also contains the file `library_model_template.lmdl`, which contains an example LMDL specification for a library action subtree.

**3.1.2.1 Subdirectory: `models/ada_x`** ...contains the LMDL and RBDL specifications and associated text files for a sample RLF library describing the STARS Ada/Xt system. The specification files must be processed by the LMDL and RBDL translators to build the `ada_x` knowledge base.

**3.1.2.2 Subdirectory: `models/animals`** ...contains the LMDL specification and associated text files for a sample knowledge base describing a simple animals taxonomy. The specification files must be processed by the LMDL translator to build the `animals` knowledge base.

**3.1.2.3 Subdirectory: `models/asw`** ...contains the LMDL specification and associated text files for a sample RLF library addressing the anti-submarine warfare (ASW) domain. The specification files must be processed by the LMDL translator to build the `asw` library.

**3.1.2.4 Subdirectory: `models/common_data_model`** ...contains the LMDL specification and associated text files for a sample RLF library illustrating how the Common Data Model defined in the STARS ALOAF document can be expressed using RLF. The specification files must be processed by the LMDL translator to build the `Common Data Model` library.

**3.1.2.5 Subdirectory: `models/demo_actions`** ...contains the LMDL specification and associated text files for a sample RLF library addressing the modeling of LMDL actions. The sound actions contained in this library only work on a Sun workstation that has a sound board. The specification files must be processed by the LMDL translator to build the `Demo Actions` library.

**3.1.2.6 Subdirectory: `models/window_manager`** ...contains the LMDL and RBDL specifications and associated text files for a sample RLF library addressing the SEI's FODA example on move operations in the window manager domain. The specification files must be processed by the LMDL and RBDL translators to build the **Move Domain** library.

**3.1.2.7 Subdirectory: `models/software_technology`** ...contains the LMDL specification and associated text files for a sample RLF library providing both a functional- and product-oriented view into the domain and defining numerous attributes for describing software engineering components. The specification files must be processed by the LMDL translator to build the **Software Technology** library.

**3.1.2.8 Subdirectory: `models/sort_and_search`** ...contains the LMDL and RBDL specifications and associated text files for a sample RLF library describing a sort and search algorithms domain. The specification files must be processed by the LMDL and RBDL translators to build the **Sort and Search** library.

### **3.1.3 Directory: Libraries**

The **Libraries** directory contains two prebuilt RLF version 4.1 libraries. The subdirectories **Taustuff**, **Text**, **Text/demo\_action**, and **Text/sort\_and\_search** contain text and AdaTAU information for the two libraries.

### **3.1.4 Directory: `unix/bin`**

The **unix/bin** directory contains the binaries and support files used to execute the UNIX Sun-4 version of the RLF. This directory contains the application resource file **RLF\_Browser**, the **Graphical\_Browser** start-up script **RLF\_GB**, a sample RLF start-up file **.rlfrc**, and the associated bitmaps for the **RLF\_Browser** file in the subdirectory **bitmaps**. These items are used with the **Graphical\_Browser** application, with the **.rlfrc** also being used for the other RLF applications.

Included in the RLF 4.1 release is a **Sndl\_to\_Lmdl** translator for the conversion of the old SNDL syntax to the LMDL syntax for RLF library models.

This directory also contains public-domain executables that are used by the sample models included with this release, which are not part of the standard SunOS or X releases. The executables included are **less** and **xloadimage**. In addition, a script called **view\_stp.csh** is provided as an example of an RLF action to view a Software Through Pictures (STP) diagram using STP.

The start-up script **RLF\_GB** and the sample start-up file **.rlfrc** are included in this document in Appendix B.

**3.1.4.1 Subdirectory: bin/bitmaps** ...contains the bitmaps used in the execution of the **Graphical\_Browser**.

### **△ 3.2 Changes Installed for Version 4.1**

The largest changes in RLF 4.1 from RLF 4.0 is the support for the operation of RLF on top of PCTE in addition to UNIX. However, these changes do not affect the UNIX Binary Release. Other changes include documentation updates (including UNIX-style *man* pages) and **Library\_Manager** application refinement.

#### **3.2.1 *Library\_Manager* Application Refinement**

The **Library\_Manager** application introduced in RLF 4.0 has been refined in version 4.1 to replace some dynamic menus with scrollable list widgets and to desensitize button choices which would lead to the pop-up of an empty menu. A limit on the number of libraries the **Library\_Manager** could process was also removed.

#### **3.2.2 RLF Graphical Browser**

No significant changes were made to the UNIX version of the **Graphical\_Browser**.

#### **3.2.3 RLF Sample Libraries**

The old RLF model **move\_domain** has been renamed to **window\_managers**.

#### **3.2.4 Installation Script Insertion**

An installation script is now provided for the binary release of the RLF. This script installs the **RLF\_Browser** resource file and its associated bitmaps in an appropriate directory.

The following files were added or changed to support automated installation:

```
Install_RLF.bin  
Install_RLF.csh  
Install_RLF.var
```

### **3.3 Adaptation Data**

#### **3.3.1 Operating Environment**

Sun workstation with a minimum of 8 MB of main memory

SunOS Version 4.1 or later

X Window System, Version 11, Release 4

### **3.3.2 Development Environment**

Sun-4 workstations with a minimum of 8 MB of main memory

SunOS Version 4.1 or later

SERC Ada/Motif, Version 1.0 for Sun Ada version 1.1

Reusable Graphical Browser, Version 1.0 (*Graphical\_Browser* only)

X Window System, Version 11, Release 4

OSF/Motif version 1.1

Sun Ada Version 1.1

## **3.4 Interface Compatibility**

### **3.4.1 Previously Built RLF Libraries**

The 4.1 version of the RLF is compatible with version 4.0 RLF libraries, but is incompatible with pre-4.0 libraries. Post-4.0 versions of the RLF cannot accept RLF libraries built with pre-4.0 versions of RLF. LMDL now supercedes SNDL as the library modeling language.

### **3.4.2 Libraries Built with Different Compilers**

Data representations are different between Ada compilers. As a result, RLF libraries created by old versions of the RLF built with other compilers are not compatible with libraries created by a version of the RLF built with the Sun Ada compiler.

## **3.5 Installation and Usage Instructions**

All the executables for the RLF are located in the `unix/bin` directory. The file `Install_RLF_bin` is an executable UNIX C shell script, which can be used to install the UNIX binary version of the RLF. The complete installation and verification procedures are located in the *RLF Installation Guide*.

NOTE: Appendix C contains a listing of the UNIX installation scripts provided in this distribution.

### 3.5.1 Invoking RLF Applications

Once the RLF executables have been installed, any of the executables can be run by invoking them by name. Information about invoking the RLF Graphical\_Browser application is located in the *RLF User's Manual*. Additional information about RLF applications and their uses may be found in the *RLF Modeler's Manual* and the *RLF Administrator's Manual*.

## 3.6 Potential Problems

### 3.6.1 Graphical\_Browser Known Problems

During the execution of the Graphical\_Browser a few infrequent errors may occur. The errors listed here are attributed to bugs in Motif version 1.1. It is expected that future versions of Motif will eliminate these errors.

The following is the list of known errors and thier descriptions:

1. **Warning: XtRemoveGrab asked to remove a widget not on the list** — This text message, which appears in the originating window, often occurs when a window in the Graphical\_Browser is exited or canceled.
2. **Menu bar menu relocating to upper left hand corner of the screen** — This event can happen when the Node History menu option, which is in the Navigate View menu bar option, is selected. As the pointer passes over the menu entry the cascading menu may be placed in the upper left hand corner of the screen.
3. **Node menu creation error** — This display alert box randomly appears when a node is selected. If the node is selected again the error usually does not occur. Reselect the node and the correct menu should appear.

## 3.7 Future Enhancements

For the basic RLF capabilities, future enhancements may include:

1. Additional built-in Ada procedure actions.
2. Performance enhancements for the LMDL translator.
3. Better integration between library models and inferencer advice modules.

In the area of the Library\_Manager, future enhancements may include:

1. The ability to manipulate several directories containing library model representations.

2. LMDL features to dump and display LMDL for library model entities.
3. Finer control of attribute and inferencer file representations and library representation permissions.
4. Fully implemented import and export capability for assets.
5. Extensive model editing capabilities.

In the area of the **Graphical Browser**, future enhancements may include:

1. Adding more sophisticated query capabilities to the simple pattern matcher of the Search function.
2. Adding a control panel to modify start-up variables, such as the aggregation view depth, after the application has started.
3. Improved view management, involving such capabilities as dynamic graph relayout, zooming, and more sophisticated filtering flexibility.

#### **4 USER FEEDBACK**

This version of RLF is considered an "alpha" release. One of the primary purposes of the release is to encourage experimentation with the software and to solicit feedback from the Ada user community to assist us in improving the product and advancing software reuse. Thus, we would greatly appreciate your comments, suggestions, and criticisms. Although we do not guarantee the applicability of the RLF to particular application needs at this time, we are interested in hearing about successes as well as failures.

We have included three forms in this release which we hope you will use to provide us with needed feedback:

- A registration form (in file **Registration.Form**) that we would like you to fill out and return to us so that we can keep track of our user base and can notify you of product upgrades and other important product news.
- A Program Problem Report (in file **Problem\_Report**) that you should use to identify any specific problems you encounter in installing and using the software.
- A New Feature Request (in file **Feature\_Request**) that you should use to describe specific enhancements that you believe should be incorporated into the product.

We have established three electronic mailing lists to facilitate RLF usage and feedback:

- **rlf@stars.rosslyn.paramax.com**

This list provides a public forum for discussing RLF issues. If you ask to be included in this list, you will receive all messages sent to the list and may respond accordingly.

- **rlf-request@stars.rosslyn.paramax.com**

You should send your completed registration form to this address, as well as requests to be added to or deleted from the rlf list (NOTE: Do NOT send add or delete requests to the **rlf** list itself).

- **rlf-bugs@stars.rosslyn.paramax.com**

You should send completed Program Problem Reports and New Feature Requests to this address.

If you do not have electronic mail access or wish to send us printed information, please send mail to:

RLF  
Paramax STARS Center  
12010 Sunrise Valley Drive  
Reston, VA 22091

## 5 NOTES

Both AdaTAU and AdaKNET were designed for independent use by applications requiring knowledge representation and inferencing capabilities. The specification languages provided for these subsystems foster their transfer to diverse application areas and their programmatic interfaces enable their integration into general Ada applications. Additional applications will help determine system shortcomings and lead to their correction.

## A Appendix: Inventory of Contents

NOTE: "\*" identifies executables; "/" identifies directories

```
..  
Contents.tty  
Install_RLF_bin*  
Libraries/  
README  
VDDrlf_unix_bin.ps  
VDDrlf_unix_bin.tty  
docs/  
man/  
models/  
unix/  
  
Libraries:  
2097153.HYB  
3145729.HYB  
ALL*  
AdaNET_States*  
KNET2097154MI_GEN_RESTR  
KNET2097154MI_PAR_RESTR  
KNET2097154SUBROLE  
KNET3145730MI_GEN_RESTR  
KNET3145730MI_PAR_RESTR  
KNET3145730SUBROLE  
NET2097155ACTION  
NET2097155ACTION_ATTRS  
NET2097155ACT_ATTR_TBL  
NET2097155GC  
NET2097155GEN_ACT_OWN_TBL  
NET2097155GEN_OWN_TBL  
NET2097155INDIV  
NET2097155INDIV_TBL  
NET2097155IND_ACT_OWN_TBL  
NET2097155IND_OWN_TBL  
NET2097155RNG_RESTR_TBL  
NET2097155ROLE  
NET2097155SATIS_TBL  
NET2097155SPEC_TBL  
NET2097155SUBROLE_TBL  
NET2097155VAL_RESTR_TBL  
NET3145731ACTION  
NET3145731ACTION_ATTRS  
NET3145731ACT_ATTR_TBL  
NET3145731GC  
NET3145731GEN_ACT_OWN_TBL  
NET3145731GEN_OWN_TBL  
NET3145731INDIV  
NET3145731INDIV_TBL  
NET3145731IND_ACT_OWN_TBL  
NET3145731IND_OWN_TBL  
NET3145731RNG_RESTR_TBL
```

NET3145731ROLE  
NET3145731SATIS\_TBL  
NET3145731SPEC\_TBL  
NET3145731SUBROLE\_TBL  
NET3145731VAL\_RESTR\_TBL  
STATE\*  
Taustuff/  
Text/  
UID\_FILE\*

Libraries/Taustuff:

10485885.A  
10485885.C  
10485885.CF  
10485885.CL  
10485885.F  
10485885.FL  
10485885.FPL  
10485885.I  
10485885.IF  
10485885.IL  
10485885.Q  
10485885.QF  
10485885.QL  
10485885.S  
10485885.SL  
10485885.U  
10485885.UL  
10485885.UR  
10485885.URF  
11534344.A  
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11534344.CF  
11534344.CL  
11534344.F  
11534344.FL  
11534344.FPL  
11534344.I  
11534344.IF  
11534344.IL  
11534344.Q  
11534344.QF  
11534344.QL  
11534344.S  
11534344.SL  
11534344.U  
11534344.UL  
11534344.UR  
11534344.URF  
12583025.A  
12583025.C  
12583025.CF  
12583025.CL  
12583025.F

12583025.FL  
12583025.FPL  
12583025.I  
12583025.IF  
12583025.IL  
12583025.Q  
12583025.QF  
12583025.QL  
12583025.S  
12583025.SL  
12583025.U  
12583025.UL  
12583025.UR  
12583025.URF  
13631496.A  
13631496.C  
13631496.CF  
13631496.CL  
13631496.F  
13631496.FL  
13631496.FPL  
13631496.I  
13631496.IF  
13631496.IL  
13631496.Q  
13631496.QF  
13631496.QL  
13631496.S  
13631496.SL  
13631496.U  
13631496.UL  
13631496.UR  
13631496.URF  
14680072.A  
14680072.C  
14680072.CF  
14680072.CL  
14680072.F  
14680072.FL  
14680072.FPL  
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14680072.IF  
14680072.IL  
14680072.Q  
14680072.QF  
14680072.QL  
14680072.S  
14680072.SL  
14680072.U  
14680072.UL  
14680072.UR  
14680072.URF  
15728682.A  
15728682.C

15728682.CF  
15728682.CL  
15728682.F  
15728682.FL  
15728682.FPL  
15728682.I  
15728682.IF  
15728682.IL  
15728682.Q  
15728682.QF  
15728682.QL  
15728682.S  
15728682.SL  
15728682.U  
15728682.UL  
15728682.UR  
15728682.URF  
16777224.A  
16777224.C  
16777224.CF  
16777224.CL  
16777224.F  
16777224.FL  
16777224.FPL  
16777224.I  
16777224.IF  
16777224.IL  
16777224.Q  
16777224.QF  
16777224.QL  
16777224.S  
16777224.SL  
16777224.U  
16777224.UL  
16777224.UR  
16777224.URF  
17825800.A  
17825800.C  
17825800.CF  
17825800.CL  
17825800.F  
17825800.FL  
17825800.FPL  
17825800.I  
17825800.IF  
17825800.IL  
17825800.Q  
17825800.QF  
17825800.QL  
17825800.S  
17825800.SL  
17825800.U  
17825800.UL  
17825800.UR

17825800.URF  
4194349.A  
4194349.C  
4194349.CF  
4194349.CL  
4194349.F  
4194349.FL  
4194349.FPL  
4194349.I  
4194349.IF  
4194349.IL  
4194349.Q  
4194349.QF  
4194349.QL  
4194349.S  
4194349.SL  
4194349.U  
4194349.UL  
4194349.UR  
4194349.URF  
5242888.A  
5242888.C  
5242888.CF  
5242888.CL  
5242888.F  
5242888.FL  
5242888.FPL  
5242888.I  
5242888.IF  
5242888.IL  
5242888.Q  
5242888.QF  
5242888.QL  
5242888.S  
5242888.SL  
5242888.U  
5242888.UL  
5242888.UR  
5242888.URF  
6291464.A  
6291464.C  
6291464.CF  
6291464.CL  
6291464.F  
6291464.FL  
6291464.FPL  
6291464.I  
6291464.IF  
6291464.IL  
6291464.Q  
6291464.QF  
6291464.QL  
6291464.S  
6291464.SL

6291464.U  
6291464.UL  
6291464.UR  
6291464.URF  
7340136.A  
7340136.C  
7340136.CF  
7340136.CL  
7340136.F  
7340136.FL  
7340136.FPL  
7340136.I  
7340136.IF  
7340136.IL  
7340136.Q  
7340136.QF  
7340136.QL  
7340136.S  
7340136.SL  
7340136.U  
7340136.UL  
7340136.UR  
7340136.URF  
8388616.A  
8388616.C  
8388616.CF  
8388616.CL  
8388616.F  
8388616.FL  
8388616.FPL  
8388616.I  
8388616.IF  
8388616.IL  
8388616.Q  
8388616.QF  
8388616.QL  
8388616.S  
8388616.SL  
8388616.U  
8388616.UL  
8388616.UR  
8388616.URF  
9437301.A  
9437301.C  
9437301.CF  
9437301.CL  
9437301.F  
9437301.FL  
9437301.FPL  
9437301.I  
9437301.IF  
9437301.IL  
9437301.Q  
9437301.QF

9437301.QL  
9437301.S  
9437301.SL  
9437301.U  
9437301.UL  
9437301.UR  
9437301.URF  
Inf\_UID\_Mapping

Libraries/Text:

1048659  
1048660  
1048661  
2097235  
2097236  
2097237  
3145842  
3145843  
3145844  
3145845  
3145846  
3145847  
3145848  
3145849  
3145850  
3145851  
3145852  
3145853  
animals/  
sort\_and\_search/

Libraries/Text/animals:

del  
dick  
snoopy  
teri  
tim  
xterm\_pager.tool\*

Libraries/Text/sort\_and\_search:

exchange\_sort\_desc  
heap\_spec\_.a  
insertion\_sort\_desc  
quick\_sort\_.a  
selection\_sort\_desc  
shaker\_sort\_.a  
xterm\_less.tool\*  
xterm\_less\_int.tool\*

docs:

manuals/  
tutorials/

docs/manuals:

```
AdministratorsManual.ps
AdministratorsManual.tty
InstallationGuide_Binary.ps
InstallationGuide_Binary.tty
InstallationGuide_Source.ps
InstallationGuide_Source.tty
ModelersManual.ps
ModelersManual.tty
UsersManual.ps
UsersManual.tty

docs/tutorials:
RLF_UM
admin-art.ps
admin-training.tex
model-art.ps
model-training.tex
user-art.ps
user-training.tex

man:
cat1/
man1/
whatis

man/cat1:
Graphical_Browser.1
Library_Manager.1
Lmdl.1
RLF.1
RLF_GB.1
Rbd1.1
rlf.1

man/man1:
Graphical_Browser.1
Library_Manager.i
Lmdl.1
RLF.1
RLF_GB.1
Rbd1.1
rlf.1

models:
ada_x/
animals/
asw/
common_data_model/
demo_actions/
library_model_template.lmdl
library_model_template_pcte.lmdl
software_technology/
sort_and_search/
window_manager/
```

```
models/ada_x:  
Build_Ada_X_Lib.csh*  
Build_Ada_X_Lib.esh*  
ada_x.lmdl*  
ada_x_pcte.lmdl*  
ada_xt_widget_package.rbd1*  
ada_xt_widget_pkg.rbd1*  
application_shell_widget_package.rbd1*  
application_shell_widget_pkg.rbd1*  
ascii_disk.rbd1*  
ascii_disk_widget_package.rbd1*  
ascii_disk_widget_pkg.rbd1*  
ascii_string.rbd1*  
ascii_string_widget_package.rbd1*  
ascii_string_widget_pkg.rbd1*  
bboard.rbd1*  
bboard_widget_package.rbd1*  
bboard_widget_pkg.rbd1*  
command.rbd1*  
command_widget_package.rbd1*  
command_widget_pkg.rbd1*  
composite_object_widget_package.rbd1*  
composite_object_widget_pkg.rbd1*  
composite_widget_package.rbd1*  
composite_widget_pkg.rbd1*  
constraint_widget_package.rbd1*  
constraint_widget_pkg.rbd1*  
core.rbd1*  
core_widget_package.rbd1*  
core_widget_pkg.rbd1*  
dialog.rbd1*  
dialog_widget_package.rbd1*  
dialog_widget_pkg.rbd1*  
form.rbd1*  
form_widget_package.rbd1*  
form_widget_pkg.rbd1*  
label.rbd1*  
label_widget_package.rbd1*  
label_widget_pkg.rbd1*  
manager.rbd1*  
manager_widget_package.rbd1*  
manager_widget_pkg.rbd1*  
object_widget_package.rbd1*  
object_widget_pkg.rbd1*  
override_shell_widget_package.rbd1*  
override_shell_widget_pkg.rbd1*  
rect_object_widget_package.rbd1*  
rect_object_widget_pkg.rbd1*  
scroll.rbd1*  
scroll_widget_package.rbd1*  
scroll_widget_pkg.rbd1*  
shell_widget_package.rbd1*  
shell_widget_pkg.rbd1*
```

```
simple.rbd1*
simple_widget_package.rbd1*
simple_widget_pkg.rbd1*
text.rbd1*
text_widget_package.rbd1*
text_widget_pkg.rbd1*
top_level_shell_widget_package.rbd1*
top_level_shell_widget_pkg.rbd1*
transient_shell_widget_package.rbd1*
transient_shell_widget_pkg.rbd1*
vendor_shell_widget_package.rbd1*
vendor_shell_widget_pkg.rbd1*
viewport.rbd1*
viewport_widget_package.rbd1*
viewport_widget_pkg.rbd1*
widget.rbd1*
window_object_widget_package.rbd1*
window_object_widget_pkg.rbd1*
wm_shell_widget_package.rbd1*
wm_shell_widget_pkg.rbd1*

models/animals:
Build_Animals_Lib.csh*
Build_Animals_Lib.esh*
Text/
animals.lmdl*
animals_pcte.lmdl*

models/animals/Text:
del*
dick*
snoopy*
teri*
tim*
xterm_page.r.tool*

models/asw:
Build_Asw_Lib.csh*
Build_Asw_Lib.esh*
Text/
asw.lmdl*
asw_pcte.lmdl*

models/asw/Text:
AGP_CommandsSada*
AGP_InputBada*
AGP_InputSada*
AGP_Memory_ManagerSada*
AGP_OutputBada*
AGP_OutputSada*
confirm_panel_package*
dialog_public_a*
dialog_publica*
dialog_publica2*
```

```
form_public_a*
form_publica*
viewport_public_a*
viewport_publica*
xterm_int.tool*
xterm_less.tool*

models/common_data_model:
Build_Common_Data_Model_Lib.csh*
Build_Common_Data_Model_Lib.esh*
Text/
common_data_model.lmdl*
common_data_model_pcte.lmdl*

models/common_data_model/Text:
astronomical_constants_s.a*
desc_astronomical_constants_s*
desc_math_interface_sb*
desc_overpass*
desc_sat_comp_sb*
desc_sat_io_b*
desc_sat_io_s*
desc_units_s*
math_interface_sb.a*
overpass.a*
restr_as_is_warranty*
sat_comp_sb.a*
sat_io_b.a*
sat_io_s.a*
units_s.a*

models/demo_actions:
Build_Demo_Actions_Lib.csh*
Build_Demo_Actions_Lib.esh*
Text/
demo_actions.lmdl*
demo_actions_pcte.lmdl*

models/demo_actions/Text:
building*
general_floorplan*
imprint.tool*
lpr.tool*
message*
my_floorplan*
play.tool*
sounds/
xbm/
xloadimage.tool*
xterm_less.tool*
xterm_vi.tool*

models/demo_actions/Text/sounds:
clint_eastwood.au*
```

```
completely_op.au*
goodcoffee.au*
kirk_spock_boundary.au*
klaxton.au*
mccoy_all.au*
phasars_3.au*
photons_3.au*

models/demo_actions/Text/xbm:
Jerry_Bob.xbm*
eye.xbm*
fist.xbm*
full_owl.xbm*
launch.xbm*
lips.xbm*
mandelbrot.xbm*
mandelbrot_seahorses.xbm*
nebula.xbm*
owl_head.xbm*
planet_miranda.xbm*
small_galaxy.xbm*
spock.xbm*

models/software_technology:
Build_SW_Tech_Lib.csh*
Build_SW_Tech_Lib.esh*
SW_Tech_Model_Description.txt*
Text/
sw_tech.lmdl*
sw_tech_pcte.lmdl*

models/software_technology/Text:
bob_pollack*
darpa_isto*
jack_chapman*
karen_roth*
payton_ssags_paper*
pollack_and_loftus*
pollack_mfpl_paper*
pollack_tree_transformation_paper*
q13_tools_clc.a*
q13_tools_clc.abs*
q13_tools_clc.con*
q13_tools_clc_build.csh*
q13_tools_clc_test.a*
q9-c300.abs*
q9-c300.con*
q9-c300.doc*
q9-c300.ref*
q9-c300.tem*
q9-c340.abs*
q9-c340.con*
q9-c340.doc*
q9-c340.ref*
```

```
q9-c340.tem*
q9-c350.abs*
q9-c350.con*
q9-c350.doc*
q9-c350.ref*
q9-c350.tem*
q9-c360.abs*
q9-c360.con*
q9-c360.doc*
q9-c360.ref*
q9-c360.tem*
software_a_and_e*
software_technology_inc*
ssags.abs*
ssags.con*
ssags.tem*
vfl_history*

models/sort_and_search:
Build_SaS_Lib.esh*
Build_Sort_And_Search_Lib.csh*
Text/
algorithms.rbd1*
binary_ins.rbd1*
diminishing_inc.rbd1*
exchange_sorts.rbd1*
heapsort.rbd1*
insertion_sorts.rbd1*
internal_sorts.rbd1*
quicksort.rbd1*
selection_sorts.rbd1*
shakersort.rbd1*
shellsort.rbd1*
sort_algorithms.rbd1*
sort_and_search.lmdl*
sort_and_search_pcte.lmdl*
straight_ins.rbd1*
straight_sel.rbd1*

models/sort_and_search/Text:
exchange_sort_desc*
heap_spec_.a*
insertion_sort_desc*
quick_sort_.a*
selection_sort_desc*
shaker_sort_.a*
xterm_less.tool*
xterm_less_int.tool*

models/window_manager:
Build_Window_Manager_Lib.csh*
Build_Window_Manager_Lib.esh*
Text/
move_domain.lmdl*
```

```
move_domain.rbd1*
move_domain_pcte.lmdl*
option_move_resize.rbd1*
sunview_move.rbd1*
x10_move.rbd1*

models/window_manager/Text:
abort_move.att*
constrained_move.att*
expose_after_move.att*
move_domain_concept.help*
move_icon.att*
partially_off_screen.att*
tiled_layout.descr*
xterm_less_12.tool*
xterm_less_40.tool*

unix:
bin/

unix/bin:
.rlfr
Install_RLF.csh*
Install_RLF.var
RLF_Browser
RLF_GB*
Sndl_to_Lmdl*
bitmaps/
less*
view_stp.csh*
xloadimage*

unix/bin/bitmaps:
alert.xbm
alert_notice.xbm
bigquestion.xbm
box_AI_m.xbm
box_AI_rev_m.xbm
box_AI_rev_s.xbm
box_AI_rev_xs.xbm
box_AI_s.xbm
box_AI_xs.xbm
box_A_m.xbm
box_A_rev_m.xbm
box_A_rev_s.xbm
box_A_rev_xs.xbm
box_A_s.xbm
box_A_xs.xbm
box_I_m.xbm
box_I_rev_m.xbm
box_I_rev_s.xbm
box_I_rev_xs.xbm
box_I_s.xbm
box_I_xs.xbm
```

box\_l.xbm  
box\_m.xbm  
box\_rev\_m.xbm  
box\_s.xbm  
box\_sm.xbm  
box\_xl.xbm  
box\_xs.xbm  
browser.xbm  
checkmark.xbm  
contents.xbm  
cube\_AI\_m.xbm  
cube\_AI\_rev\_m.xbm  
cube\_AI\_rev\_s.xbm  
cube\_AI\_rev\_xs.xbm  
cube\_AI\_s.xbm  
cube\_AI\_xs.xbm  
cube\_A\_m.xbm  
cube\_A\_rev\_m.xbm  
cube\_A\_rev\_s.xbm  
cube\_A\_rev\_xs.xbm  
cube\_A\_s.xbm  
cube\_A\_xs.xbm  
cube\_I\_m.xbm  
cube\_I\_rev\_m.xbm  
cube\_I\_rev\_s.xbm  
cube\_I\_rev\_xs.xbm  
cube\_I\_s.xbm  
cube\_I\_xs.xbm  
cube\_l.xbm  
cube\_m.xbm  
cube\_rev\_l.xbm  
cube\_rev\_m.xbm  
cube\_s.xbm  
cube\_sm.xbm  
cube\_xl.xbm  
cube\_xs.xbm  
dialog.xbm  
init\_browser.xbm  
null\_black.xbm  
ok\_button.xbm  
ok\_button\_16x16.xbm  
ok\_button\_32x32.xbm  
ok\_button\_45x35.xbm  
ok\_button\_46x32.xbm  
point.xbm  
point\_rev.xbm  
qmark.xbm  
quit\_button.xbm  
quit\_button\_54x35.xbm  
quit\_button\_75x32.xbm  
small\_circle.xbm  
small\_circle\_5x5.xbm  
small\_circle\_7x7.xbm  
small\_circle\_rev\_5x5.xbm

**small\_solid\_square.xbm**  
**small\_solid\_square\_5x5.xbm**  
**small\_solid\_square\_rev.xbm**  
**small\_solid\_square\_rev\_5x5.xbm**  
**small\_thick\_circle.xbm**  
**square\_24x23.xbm**

## B Appendix: RLF Start-up Files

### B.1 Sample RLF .rlfrc Start-up File

#### B.1.1 File: .rlfrc

```
1 ---|
2 ---| Sample startup file for the Reuse Library Framework version 4.1
3 ---|
4
5 ---|
6 ---| Library directory or name specifications
7 ---|
8 --library directory : /path/Libraries
9 --library : "Sort and Search Algorithms"
10
11 ---|
12 ---| Parameters for the RLF Graphical Browser
13 ---|
14 topology : off
15 cardinality : off
16 layout offset : x : 20
17 layout offset : y : 5
18 history length : 50
19 view type : specialization
20 view depth : relationship : 2
21
22 ---|
23 ---| AdaTau inferencing settings
24 ---|
25 advice : explanations : all
26 advice : automatic move : false
27
28 ---|
29 ---| Bitmaps for nodes
30 ---|
31 --node bitmap : category : /path/box_m.xbm
32 --node bitmap : category : inferencer : /path/box_I_m.xbm
33 --node bitmap : category : actions : /path/box_A_m.xbm
34 --node bitmap : category : inferencer actions : /path/box_AI_m.xbm
35 --node bitmap : object : /path/cube_m.xbm
36 --node bitmap : object : inferencer : /path/cube_I_m.xbm
37 --node bitmap : object : actions : /path/cube_A_m.xbm
38 --node bitmap : object : inferencer actions : /path/cube_AI_m.xbm
39
40 ---|
41 ---| Specification translator settings
42 ---|
43 translator: Lmdl: quiet: no
44 translator: Rbdl: quiet: no
```

## B.2 RLF Graphical Browser Start-up Script

### B.2.1 Script: RLF\_GB

```
1  #!/bin/csh -f
2  #
3  #
4  # RLF_GB - Startup script for the RLF Graphical Browser, v.4.1
5  #
6  # 1.) Check that an X environment is present and running.
7  #
8  # 2.) Ensure the environment variables (RLF_LIBRARIES, DISPLAY, and possibly
9  #       XAPPLRESDIR) are properly set.
10 #
11 # 3.) Invoke the Graphical Browser with all command line arguments specified
12 #       by the user.
13 #
14 # If either an environment variable is not set or incorrectly set or X is not
15 #       running, then abort the script and notify the user of the problem.
16 #
17 #
18
19 echo ""
20 echo " ====="
21 echo " RLF v.4.1 Graphical Browser Startup Script "
22 echo " ====="
23 echo ""
24 #
25 #
26 # Determine if the DISPLAY environment variable is set;
27 # if it is set, then proceed;
28 # if it is not set, attempt to set it to a meaningful value.
29 #
30 if ( ! $?DISPLAY ) then
31     set host_name = `hostname`
32     setenv DISPLAY ${host_name}:0
33 endif
34
35
36 echo ""
37 echo " Ensure the DISPLAY environment variable is"
38 echo " set correctly; the correct format is <host_name>:0,"
39 echo " where the host_name indicates what CPU your X server "
40 echo " is running on."
41 echo ""
42 echo "Currently, DISPLAY = "
43 echo " $DISPLAY"
44 echo ""
45 set local_host = `echo $DISPLAY | sed 's/.*$//'`
46 echo "This means the graphical output will be sent to host: "
47 echo " $local_host"
48 echo ""
49 #
50 #-----
```

```
51 # Query the X resource database to determine whether $DISPLAY is valid.
52 #-----
53 xrdb -query >& /dev/null
54
55 #-----
56 # The DISPLAY environment variable was set incorrectly
57 # if the status is not 0. Notify the user.
58 #-----
59 if ( ! $status == 0 ) then
60     unsetenv DISPLAY
61     echo ""
62     echo "    There's a problem with your X server."
63     echo "    There's probably no X server running on host 'hostname'."
64     echo "    Determine where your X server is running,"
65     echo "    then issue the following command:"
66     echo ""
67     echo "        setenv DISPLAY <hostname>:0"
68     echo ""
69     echo "        where <hostname> is the host where your "
70     echo "        X server is running."
71     echo ""
72 endif
73
74 #-----
75 # If RLF_LIBRARIES environment variable not already set, or
76 # incorrectly set exit the script and notify the user.
77 #-----
78 if ( ! $?RLF_LIBRARIES ) then
79
80     #
81     # Check the command line options to see if the user
82     # specified a library
83     #
84     if ( $#argv >= 2 ) then
85
86         @ index = 1
87
88         while ($#argv >= $index + 1)
89
90             @ index2 = $index + 1
91
92             if ( $argv[$index] == "-I" ) then
93                 if ( ( -d $argv[$index2]/Text ) && \
94                     ( -d $argv[$index2]/Taustuff ) ) then
95                     echo "Library directory to be used is $argv[$index2]"
96                     echo ""
97                     goto Library_Found
98             else
99                 echo ""
100                echo "FATAL ERROR:"
101                echo "    The RLF library ($argv[$index2]) you"
102                echo "    indicated from the command line is invalid."
103                echo "    You must set it to a proper RLF library location."
104                echo ""
```

```
105                         exit(-1)
106
107                         endif
108
109                         endif
110
111                         @ index++
112
113                         end
114
115                         endif
116
117                         echo ""
118                         echo "FATAL ERROR:"
119                         echo "      RLF_LIBRARIES is currently unset."
120                         echo "      You must set it to the proper location"
121                         echo "      or specify a library directory with "
122                         echo "      a command line option."
123                         echo ""
124
125                         exit(-1)
126
127 else if ( ( ! -d $RLF_LIBRARIES/Text) || ( ! -d $RLF_LIBRARIES/Taustuff) ) then
128
129                         echo ""
130                         echo "FATAL ERROR:"
131                         echo "      RLF_LIBRARIES is incorrectly set."
132                         echo "      There are missing elements in the libraries."
133                         echo "      You must set it to the proper location."
134                         echo ""
135
136                         exit(-1)
137
138 endif
139
140 echo "Currently, RLF_LIBRARIES = "
141 echo "  $RLF_LIBRARIES"
142 echo ""
143
144 Library_Found:
145
146 #-----
147 # Set other X Window System environment variables (besides DISPLAY).
148 #
149 # Make a couple of guesses as to where the RLF_Browser file resides.
150 # If the RLF_Browser is not found, then alert the user.
151 #
152 if ( ! $XAPPLRESDIR ) then
153
154     No_Browser_File:
155
156     if ( -e RLF_Browser ) then
157
158         setenv XAPPLRESDIR '/bin/pwd'
```

```
159
160     else
161         if ( ! -e /usr/lib/X11/app-defaults/RLF_Browser ) then
162
163             echo ""
164             echo "WARNING: "
165             echo "    Environment variable XAPPLRESDIR is undefined."
166             echo "    You need to find the pathname to the RLF_Browser file."
167             echo "    Then issue the following command:"
168             echo "        setenv XAPPLRESDIR <pathname>"
169             echo ""
170             echo ""
171
172     else
173
174         echo ""
175         echo "You will be using the following RLF_Browser resource file"
176         echo "    /usr/lib/X11/app-defaults/RLF_Browser"
177         echo ""
178         setenv XAPPLRESDIR /usr/lib/X11/app-defaults
179
180     endif
181
182 endif
183
184 else
185     if ( ! -e $XAPPLRESDIR/RLF_Browser ) then
186
187         goto No_Browser_File
188
189     endif
190
191 endif
192
193 #-----
194 # Check if a "bitmaps" directory resides beneath $XAPPLRESDIR.
195 #-----
196 if ( $?XAPPLRESDIR ) then
197     echo ""
198     echo "Currently, XAPPLRESDIR = "
199     echo "    $XAPPLRESDIR"
200     echo ""
201
202     if ( ! -d $XAPPLRESDIR/bitmaps ) then
203         echo ""
204         echo "WARNING: "
205         echo "    Bitmaps directory not found:"
206         echo "    $XAPPLRESDIR/bitmaps was not found."
207         echo ""
208         echo "    The RLF Graphical Browser will not be able to display"
209         echo "    its bitmaps for the graph nodes.  This may make the"
210         echo "    graph display less aesthetically pleasing."
211         echo ""
212         echo "    The 'bitmaps' directory should exist as a subdirectory"
```

```
213      echo "      from the location of the 'RLF_Browser' file."
214      echo "      (This is a Motif limitation.)"
215      echo ""
216      endif
217  endif
218
219 #-----
220 # If the user has not already defined the environment variables
221 # RLF_PAGER and RLF_EDITOR, the script will default the to be
222 # "more" and "vi", respectively.
223 #-----
224 if ( ! $?RLF_PAGER ) then
225     setenv RLF_PAGER      more
226 endif
227
228 if ( ! $?RLF_EDITOR ) then
229     setenv RLF_EDITOR      vi
230 endif
231
232 echo ""
233 echo "RLF_PAGER = $RLF_PAGER"
234 echo "RLF_EDITOR = $RLF_EDITOR"
235 if ( ! $?RLF_WORKING_DIR ) then
236     echo ""
237     echo "RLF_WORKING_DIR undefined, so default to current working directory."
238     echo ""
239     setenv RLF_WORKING_DIR 'pwd'
240 endif
241 echo "RLF_WORKING_DIR = $RLF_WORKING_DIR"
242 echo ""
243
244 #-----
245 # Invoke the RLF Graphical_Browser with any command line arguments
246 # entered by the user.
247 #-----
248 echo ""
249 echo "Starting the RLF Graphical Browser..."
250 echo ""
251 Graphical_Browser $argv
```

## C Appendix: UNIX Installation

### C.1 Scripts for Installing the UNIX RLF Binary Release

#### C.1.1 Script: Install\_Rlf\_bin

```
1  #! /bin/csh -f
2  #-----
3  #
4  # Install_RLF_bin - C Shell script to install RLF v.4.1 Binary Release.
5  #                         This script installs the software.
6  #
7  # Usage: Install_RLF_bin
8  #
9  #-----
10
11 set config_file = "unix/bin/Install_RLF.var"          # name of installation
12                                # configuration file
13 set interactv_install = "unix/bin/Install_RLF.csh" # name of interactive
14                                # installation file
15
16 stty ignbrk                                # ignore break on input
17 stty -brkint                                # don't signal SIGINT on break
18
19 set cmdname = $0
20 if ( $#argv != 0 ) then                      # check cmd line usage
21     echo "Usage: $cmdname:t"                  # print only tail of cmd name
22     exit
23 endif
24
25 /usr/ucb/clear                                # clear the screen
26
27                                         # Display initial menu
28 cat << X_SCREEN_X
29
30 +-----+
31 |
32 |          RLF 4.1 Installation Script
33 |          Binary Release
34 |
35 +-----+
36
37 You must choose one of the following installation options:
38
39
40     1) Interactive installation
41
42         * You are prompted for all necessary
43             configuration values (i.e., pathnames).
44
45
46     2) Edit the file that contains the configuration values
47
```

```
48          * You edit the file "Install_RLF.var" and
49          set the configuration values appropriately
50          for your site.
51
52
53          3) EXIT this script.
54
55
56
57          (If you do not edit the "Install_RLF.var" file, or specify
58          invalid values, you will be prompted for the configuration
59          values anyway.)
60
61
62          Which installation option do you prefer?
63
64 X_SCREEN_X
65
66 #
67 # Read input from user.
68 #
69 set answer = 0
70 echo -n "Please enter 1, 2, or 3 > "
71 set noglob
72 set answer = ( $< )
73 set answer = ( $answer )
74 set answer = $answer[1]
75
76
77 Get_Valid_Input:
78     while ( $answer[1] != 1 && $answer[1] != 2 && $answer[1] != 3 )
79         echo ""
80         echo "I*** Invalid input. Please try again. ***"
81         echo ""
82         echo -n "Please enter A NUMBER: 1, 2, or 3 > "
83         set answer = ( $< )
84         set answer = ( $answer )
85         set answer = $answer[1]
86
87     end
88     while ( $answer[1] < 1 || $answer[1] > 3 )
89         echo ""
90         echo "I*** Invalid input. Please try again. ***"
91         echo ""
92         echo -n "Please enter 1, 2, or 3 > "
93         set answer = ( $< )
94         set answer = ( $answer )
95         set answer = $answer[1]
96     end
97
98 echo ""
99 echo "You chose: $answer[1]"
100
101 #
```

```
102 # Process input, execute appropriate procedure.
103 #
104 switch ( "$answer[1]" )           # look at char
105   case [1]:                      # Interactive
106     echo ""
107     echo "+-----+"
108     echo "| Executing interactive installation script. |"
109     echo "+-----+"
110     echo ""
111     source $interactv_install
112     breaksw
113
114   case [2]:                      # Edit the 'var' file
115     #
116     # Calculate string lengths for proper display.
117     #
118     set beginning = "      |           $config_file"
119
120   @ line = 'expr length "      +-----+"
121   @ remainder = $line - 'expr length "$beginning"
122
123   echo ""
124   echo "      +-----+"
125   echo "      | To install the Reuse Library Framework binary      |"
126   echo "      | release in batch mode, you must edit the      |"
127   echo "      | installation configuration file:      |"
128   echo "      |"
129
130   set ctr = 1
131
132   set line = "${beginning}"
133   while ( $ctr < $remainder )
134     set line = "${line} "
135     @ ctr = $ctr + 1
136
137   end
138   echo -n "$line"
139   echo "|"
140   echo "      |"
141   echo "      | Then execute the command:      |"
142   echo "      |"
143   echo "      |           Install_RLF.csh >& LOG &      |"
144   echo "      |"
145   echo "      | Once the job is finished, check the LOG file for      |"
146   echo "      | errors.      |"
147   echo "      +-----+"
148
149   case [3]:                      # Exit
150     echo ""
151     echo "Exiting installation script."
152     breaksw
153
154   case [!%]:
```

```
155      echo ""
156      echo "Pathological input."
157      echo "Of course C shell scripts are breakable, please be kind."
158      echo "T"
159      exit -1
160      breaksw
161
162      default:
163          # if here, something's wrong
164          echo "*** Invalid input. ***"
165          goto Get_Valid_Input
166          breaksw
167      endsw
168
169
170  echo ""
171  exit 1
172
173
```

**C.1.2 Script: Install.Rlf.csh**

```
1  #!/bin/csh -f
2  #
3  #
4  # Install_RLF.csh - C Shell script to install the Source Code Release
5  #                      of the RLF 4.1 software.
6  #
7  #
8  #
9  # Uncomment the following two lines if you need to increase the
10 # system resources on your host; else ignore.
11 #
12 #####limit stacksize unlimited
13 #####limit datasize unlimited
14 #
15 #
16 # Read in the site-dependent data from the 'var' file.
17 #
18 echo ""
19 echo "Define the site-dependent environment variables."
20 echo "-----"
21 echo ""
22 source ./Install_RLF.var
23
24 echo ""
25 echo "Moving the RLF GB resource file (RLF_Browser) to: "
26 echo "  $APPDEFAULTS"
27 echo ""
28 mv -f $RLFBIN/RLF_Browser $APPDEFAULTS
29
30 echo ""
31 echo "Moving the RLF GB bitmap files to: "
32 echo "  $BITMAPS"
33 echo ""
34 if ( ! -e $BITMAPS ) mkdir $BITMAPS
35 mv -f $RLFBIN/bitmaps/* $BITMAPS
36
37 echo ""
38 echo "Installation Complete"
39 echo ""
```

### C.1.3 File: Install\_Rlf.var

```
1 #-----  
2 #  
3 # Install_RLF.var - RLF software installation configuration file.  
4 #  
5 #-----  
6 #  
7 #  
8 # Directory for installation of the RLF Graphical Browser resource file  
9 # and the bitmaps sub-direcory.  
10 # Note: You usually need root priveledge to write in this directory,  
11 # Installation of the resource file and the bitmaps sub-directory will fail  
12 # if write permission id denied.  
13 #  
14 setenv APPDEFAUTLS /usr/lib/X11/app-defaults  
15 setenv BITMAPS $APPDEFAUTLS/bitmaps  
16 #  
17 #  
18 # Uncomment and edit these lines if you do not want to  
19 # be prompted for the environment variables (i.e., if you  
20 # want to run the script in batch mode instead of interactively.)  
21 #  
22 #  
23 #setenv RLFHOME /myhome/test/rlf/4.0  
24 #  
25 #  
26 # Uncomment (but do not edit) these lines.  
27 #  
28 #  
29 #setenv RLFBIN $RLFHOME/bin  
30 #  
31 #-----  
32 # END OF REQUIRED EDITING FOR BATCH MODE  
33 #-----  
34 #  
35 #  
36 # Define the location of RLFHOME  
37 #  
38 setRLFHOME:  
39 if ( $?RLFHOME == 0 ) then # if NOT set  
40 echo ""  
41 echo "Specify path to top-level RLFHOME directory "  
42 echo "-----"  
43 echo " Examples: "  
44 echo " /mybase/RLF "  
45 echo " /afs/myhome/see/rlf "  
46 echo " /usr/tools/rlf "  
47 echo " etc. "  
48 echo ""  
49 echo ""  
50 echo -n " RLFHOME = "  
51 set noglob  
52 setenv RLFHOME $<
```

```
53     echo ""
54  endif
55
56  if ( $RLFHOME == "" ) then
57      unsetenv RLFHOME
58      goto setRLFHOME
59  endif
60
61  if ( ! -e $RLFHOME ) then
62      echo ""
63      echo "I*** $RLFHOME does not exist ***"
64      echo "*** Please try again. ***"
65      echo ""
66      unsetenv RLFHOME
67      goto setRLFHOME
68  else
69      if ( ! $?RLFBIN ) then
70          if ( $PCTE == Y ) then
71              setenv RLFBIN $RLFHOME/pcte/bin
72          else
73              setenv RLFBIN $RLFHOME/unix/bin
74          endif
75      end if
76
77  endif
78
79  echo ""
80  echo "          RLFHOME = $RLFHOME"
81  echo "          RLFBIN = $RLFBIN"
82  echo ""
83  echo "          APPDEFAULTS = $APPDEFAULTS"
84  echo "          BITMAPS = $BITMAPS"
85  echo ""
```

## C.2 Scripts for Building Sample Networks

### C.2.1 Script: Build\_Ada\_X.Lib.csh

```
1 #!/bin/csh -f
2 #####limit stacksize unlimited
3 #####limit datasize unlimited
4
5 #
6 # This script builds the "Paramax STARS Ada/X" library for the RLF.
7 #
8 #
9 #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14   echo ""
15   echo "Specify path to the RLF libraries"
16   echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17   echo ""
18   echo -n " RLF_LIBRARIES = "
19   setenv RLF_LIBRARIES $<
20   echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/ada_x ) mkdir -p $RLF_LIBRARIES/Text/ada_x
27 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
28
29 echo ""
30 echo "Initializing text files"
31 echo ""
32 cp -r Text/* $RLF_LIBRARIES/Text/ada_x
33
34 echo ""
35 echo "Building library model from ada_x.lmdl"
36 echo ""
37 Lmdl ada_x.lmdl
38
39 foreach i (*.rbdl)
40   echo ""
41   echo "Creating Inferencer from $i"
42   echo ""
43   Rbdl < $i
44 end
```

### C.2.2 Script: Build\_Animals.Lib.csh

```
1 #!/bin/csh -f
2 #####limit stacksize unlimited
3 #####limit datasize unlimited
4
5 #
6 # This script builds a demonstration animals library for the RLF.
7 #
8 #
9 #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14   echo ""
15   echo "Specify path to the RLF libraries"
16   echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17   echo ""
18   echo -n " RLF_LIBRARIES = "
19   setenv RLF_LIBRARIES $<
20   echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES ) mkdir $RLF_LIBRARIES
27 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
28 if ( ! -d $RLF_LIBRARIES/Text ) mkdir $RLF_LIBRARIES/Text
29 if ( ! -d $RLF_LIBRARIES/Text/animals ) mkdir -p $RLF_LIBRARIES/Text/animals
30
31
32
33 echo ""
34 echo "Initializing text files"
35 echo ""
36 cp Text/* $RLF_LIBRARIES/Text/animals
37
38 echo ""
39 echo "Building Lmdl Network from animals.lmdl"
40 echo ""
41 Lmdl animals.lmdl
```

### C.2.3 Script: Build\_Asw\_Lib.csh

```
1  #!/bin/csh -f
2  #####limit stacksize unlimited
3  #####limit datasize unlimited
4
5  #
6  # This script builds a sample Anti-Submarine Warfare library for the RLF.
7  #
8
9  #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14   echo ""
15   echo "Specify path to the RLF libraries"
16   echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17   echo ""
18   echo -n " RLF_LIBRARIES = "
19   setenv RLF_LIBRARIES $<
20   echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/asw ) mkdir -p $RLF_LIBRARIES/Text/asw
27 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
28
29 echo ""
30 echo "Initializing text files"
31 echo ""
32 cp Text/* $RLF_LIBRARIES/Text/asw
33
34 echo ""
35 echo "Building library model from asw.lmdl"
36 echo ""
37 Lmdl asw.lmdl
```

**C.2.4 Script: Build\_Common\_Data\_Model.Lib.csh**

```
1  #!/bin/csh -f
2  #####limit stacksize unlimited
3  #####limit datasize unlimited
4
5  #
6  # This script builds a demo Common Data Model library for the RLF.
7  #
8
9  #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14   echo ""
15   echo "Specify path to the RLF libraries"
16   echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17   echo ""
18   echo -n " RLF_LIBRARIES = "
19   setenv RLF_LIBRARIES $<
20   echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/satText ) mkdir -p $RLF_LIBRARIES/Text/satText
27 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
28
29 echo ""
30 echo "Initializing text files"
31 echo ""
32 cp Text/* $RLF_LIBRARIES/Text/satText
33
34 echo ""
35 echo "Building LMDL Network from cdm.lmdl"
36 echo ""
37 Lmdl < common_data_model.lmdl
```

### C.2.5 Script: Build\_Demo\_Actions.Lib.csh

```
1 #!/bin/csh -f
2 #####limit stacksize unlimited
3 #####limit datasize unlimited
4
5 #
6 # This script builds a demonstration actions library for the RLF.
7 #
8
9 #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14   echo ""
15   echo "Specify path to the RLF libraries"
16   echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17   echo ""
18   echo -n " RLF_LIBRARIES = "
19   setenv RLF_LIBRARIES $<
20   echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/demo_actions ) then
27   mkdir -p $RLF_LIBRARIES/Text/demo_actions
28 endif
29 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
30
31 echo ""
32 echo "Initializing text files"
33 echo ""
34 cp -r Text/* $RLF_LIBRARIES/Text/demo_actions
35
36 echo ""
37 echo "Building LMDL Network from demo_actions.lmdl"
38 echo ""
39 Lmdl demo_actions.lmdl
```

**C.2.6 Script: Build\_SW\_Tech.Lib.csh**

```
1 #!/bin/csh -f
2 #####limit stacksize unlimited
3 #####limit datasize unlimited
4
5 #
6 # This script builds the Software Technology library for the RLF.
7 #
8
9 #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14   echo ""
15   echo "Specify path to the RLF libraries"
16   echo "(Defaults to $RLF/Libraries)"
17   echo ""
18   echo -n " RLF_LIBRARIES = "
19   setenv RLF_LIBRARIES $<
20   echo ""
21   if ($RLF_LIBRARIES ==) setenv RLF_LIBRARIES $RLF/Libraries
22 endif
23
24 echo ""
25 echo "Creating required sub-directories"
26 echo ""
27 if ( ! -d $RLF_LIBRARIES/Text/sw_tech ) mkdir -p $RLF_LIBRARIES/Text/sw_tech
28 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
29
30 echo ""
31 echo "Initializing text files"
32 echo ""
33 cp -r Text/* $RLF_LIBRARIES/Text/sw_tech
34
35 echo ""
36 echo "Building LMDL Network from sw_tech.lmdl"
37 echo ""
38 Lmdl sw_tech.lmdl
```

**C.2.7 Script: Build\_Sort\_And\_Search\_Lib.csh**

```

1 #!/bin/csh -f
2 ###limit stacksize unlimited
3 ###limit datasize unlimited
4
5 #
6 # This script builds the "Sort and Search Algorithms" library for the RLF.
7 #
8 #
9 #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14   echo ""
15   echo "Specify path to the RLF libraries"
16   echo "(e.g. /afs/reston/see/rlf/4.0/Libraries)"
17   echo ""
18   echo -n " RLF_LIBRARIES = "
19   setenv RLF_LIBRARIES $<
20   echo ""
21 endif
22
23 echo ""
24 echo "Creating required sub-directories"
25 echo ""
26 if ( ! -d $RLF_LIBRARIES/Text/sort_and_search ) \
27   mkdir -p $RLF_LIBRARIES/Text/sort_and_search
28 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
29
30 echo ""
31 echo "Initializing text files"
32 echo ""
33 cp -r Text/* $RLF_LIBRARIES/Text/sort_and_search
34
35 echo ""
36 echo "Building library model from sort_and_search.lmdl"
37 echo ""
38 Lmdl sort_and_search.lmdl
39
40 foreach i (*.rbd1)
41   echo ""
42   echo "Creating Inferencer from $i"
43   echo ""
44   Rbd1 < $i
45 end

```

**C.2.8 Script: Build\_Move\_Domain\_Lib.csh**

```

1 #!/bin/csh -f
2 ###limit stacksize unlimited
3 ###limit datasize unlimited
4

```

```
5  #
6  # This script builds the Cathy Lin's Window Manager library for the RLF.
7  #
8  #
9  #
10 # Locate the RLF Libraries
11 #
12 setRLF_LIBRARIES:
13 if (! $?RLF_LIBRARIES) then
14   echo ""
15   echo "Specify path to the RLF libraries"
16   echo "(Defaults to $RLF/Libraries)"
17   echo ""
18   echo -n " RLF_LIBRARIES = "
19   setenv RLF_LIBRARIES $<
20   echo ""
21   if ($RLF_LIBRARIES ==) setenv RLF_LIBRARIES $RLF/Libraries
22 endif
23
24 echo ""
25 echo "Creating required sub-directories"
26 echo ""
27 if ( ! -d $RLF_LIBRARIES/Text/wm_move ) mkdir -p $RLF_LIBRARIES/Text/wm_move
28 if ( ! -d $RLF_LIBRARIES/Taustuff ) mkdir $RLF_LIBRARIES/Taustuff
29
30 echo ""
31 echo "Initializing text files"
32 echo ""
33 cp -r Text/* $RLF_LIBRARIES/Text/wm_move
34
35 echo ""
36 echo "Building LMDL Network from move_domain.lmdl"
37 echo ""
38 Lmdl move_domain.lmdl
39
40 foreach i (*.rbdl)
41   echo ""
42   echo "Creating Inferencer from $i"
43   echo ""
44   Rbdl < $i
45 end
```